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# Challenges to blood donor notification on transfusion transmissible infections: a case study of Lodwar County and Referral Hospital Blood Bank Satelite

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**CHALLENGES TO BLOOD DONOR NOTIFICATION ON TRANSFUSION  
TRANSMISSIBLE INFECTIONS: A CASE STUDY OF LODWAR COUNTY  
AND REFERAL HOSPITAL BLOOD BANK SATELITE**

**ALICE NATABA**

**REG NO: HCM/ 98009/17**



Submitted in Partial Fulfillment of the Requirements for the Award of a Masters in Business  
Administration (MBA) Degree

**Strathmore Business School**

**MAY 2019**

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**MAY 2019**

**Approval**

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## ABSTRACT

Blood donor notification on transfusion transmissible infections (Hepatitis B/C, HIV and syphilis) status is a mandated requirement of blood bank healthcare workers. Transfusion-associated transmissible infections notification faces many challenges despite national blood bank efforts in blood donor notification. The current study was aimed to determine challenges faced by healthcare workers in Lodwar county and referral hospital blood satellite Centre. The study was done retrospectively where secondary data of blood donor records between January 2017 and December 2018 were analyzed. Primary data was collected through a survey questionnaire that was administered to healthcare workers working in Lodwar county and referral hospital blood bank satellite to identify challenges faced in blood donor notification. The study population for primary data comprised of all healthcare workers working in the blood bank satellite, Lodwar county and referral hospital chief executive officer and the deputy equal, Turkana county laboratory coordinator and deputy director for medical services in the office of medical director for medical services. A total of three thousand nine hundred and ninety six donors donated blood out of which two hundred and ninety seven were TTI positive and only ten were notified. Two hundred and twenty four males and seventy-three females were positive for the TTIs in both study years, more male were TTI positive compared to female, TTI positivity for 2017 was higher compared to 2018 while HBV positivity was higher than that of other TTIs. Donor notification challenges were, factors in relation to procedures, people and policies as the major contributors to the challenges faced by healthcare workers in blood donor notification in order of importance respectively. A number of the respondents agreed that procedure related challenges majorly contributed to lack of donor notification and these were either due to lack of donor appointments, absence of standard operating procedures, difficulty in reaching donors, lack of donor notification implementation structure and lack of donor awareness of their need to be notified. Some of respondents agreed that people challenges affected donor notification due to shortage of human resource, high workload, lack of support supervision, and lack of donor appointments. The respondents agreed that policies surrounding issues like lack of operational structure, lack of current updates on donor notification process, and lack of scheduled clinic days for donor notification were some of challenges making donor notification ineffective. Some of the respondents were neutral on provision related challenges with only a few agreeing with it. Provision and place related challenges were as not as important or highly contributing to challenges faced by healthcare workers in donor notification. Given that only 7.4% of donors were notified it means there were challenges to donor notification and this study recommended the blood bank to put up structure in relation to the three major factors associated with their challenges at the blood bank management and other stakeholder's management level. There are donors who are TTI positive and yet they are not notified as required by the blood transfusion services guidelines clearly showing that there are challenges faced by healthcare workers in donor notification. There is no clear explanation why TTI positivity was high in 2017 than in 2018, this could be attributed by may be change of donor age population, may be most of the donors were from a family replacement source of which this study did not explore. High positivity of TTI in males than in females could be due to male population who seek out for blood donation than their female counter parts, it is not clear also why

HBV positivity was higher than the other TTIs. This could be because of high risk involved in HBV transmission and cultural/ social practices. Recommendation for this study is since donors are not notified as required; the blood bank needs to put up measures for effective donor notification by addressing the factors causing the challenges to donor notification. TTI positivity should be further studied to include age and find reasons as to why males have more TTIs than their female counter parts, why HBV is highly positive than other TTIs and why there was a high TTI positivity in 2017 than in 2018 and also expand years of secondary data sample to more than two years, there is need to increase scope of study to include other blood bank satellites in Kenya in order to meet the required study population minimum standards. A low number of study population was small since donor population was selected for only two years, it was also only focusing on TTI positivity and notification, there was no segregation of TTI according to ages and which age group was mostly affected or were positive for the TTIs. The study population for primary data did not meet the required statistical data analysis threshold and may not actually represent a considerable true factors contributing to lack of donor notification challenges by healthcare workers and also the case study was limited to one blood bank satellite. Other researchers are encouraged to pursue the same research problem or topic but have to include a more elaborate scope of study to include other similar blood bank satellites in Kenya in order to increase geographical and study population coverage. Prevalence on TTI positivity can be done for all satellites unlike the previously limited studies done in Nyeri and Kisumu alone in order to widen the research area findings in all satellites. TTI positivity should be studied to ascertain which age group or gender is mostly positive with blood donor TTIs, this will help in policy formulation for development of interventions aimed to address specific issues on donor notification of positive TTI status, due to high HBV positivity in blood donor blood and in males, there need to study the reasons as to why HBV is higher than other TTIs and why the males are the mostly affected. Other research studies could focus on blood transfusion policies that support blood donation through research policy formulation especially on donor notification guidelines for school going donors.



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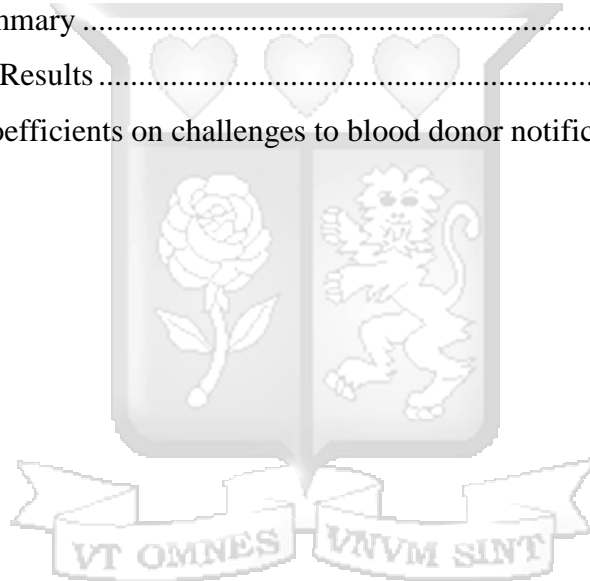
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## **DEFINITION OF TERMS**

### **Donor notification**

Is providing blood donor with the test results stating their medical significance, possible means of acquisition, transmission of agent, informing the donor of his or her eligibility regarding future blood donation.

### **Transfusion Transmissible Infections**

Is any infection identified in a donor and has a potential to cause harm to any recipient of infected blood or its products.



## LIST OF ABBREVIATIONS

ARTs:	Antiretroviral treatment
ARVs:	Antiretroviral therapy
BTS:	Blood transfusion services
CDC:	Centers for disease control
HBV:	Hepatitis B Virus
HCV:	Hepatitis C Virus
HIV:	Human immunodeficiency virus
HTSP:	HIV testing service provider.
IFNA:	interferon alpha
IFRC:	International federation of Red Cross
KNBTS:	Kenya National Blood Transfusion Services
LCRH;	Lodwar county and referral hospital
PCR:	Polymerase chain reaction.
PEP:	Post exposure prophylaxis
PrEP:	pre-exposure prophylaxis
PMTCT:	Prevention from mother to child
SDG:	Sustainable development goals
SOP:	STANDARD operating procedure
TTI:	Transfusion transmissible infections
TRA:	Theory reasoned action
TPB:	Theory planned behavior
WHO:	World health organization.

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## DEDICATION

This work is dedicated to my immediate family for their immeasurable sacrifice in letting me undertake this research and degree; this is to inspire my children that everything is possible.



# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Introduction**

This chapter provides background of the subject matter justifying the need for the study as well as stating the problem statement, included also is the study objectives, research questions, justification and significance of study which are all highlighted in this chapter. It gives highlight into the location, scope and significance of the study. It gives a brief introduction to donor notification challenges and short overview of the TTIs.

### **1.2 Background of Study**

Blood donors usually donate blood, which is screened for TTIs before transfusion to recipients. Blood banks are required to notify donors on deferred based on TTI results, as staff are supposed to document successful notification within 8 weeks (Choudhury & Tetali, 2017). Provision of safe and efficacious blood and blood components for transfusion or manufacturing involves a number of process, from selection of blood donors, collection, processing and testing of blood donations to testing of patients' sample, failure to follow any of these processes can have serious implication for recipients of blood and blood products. While transfusion is lifesaving, there are associated risks especially of transmission of blood borne infections (Choudhury & Tetali, 2017).

Screening for transfusion transmissible infections (TTTs) to exclude blood donations at risk of transmitting infections from donors to recipients is critical part of the process of ensuring that transfusion is as safe as possible, effective screening of TTIs is essential so that only non-reactive blood is transfused to recipient.

The prevalence of TTIs in voluntary non-remunerated blood donors is generally much lower than among family replacement and paid donors. Each country and county should establish voluntary blood donor programs that provide donor information and education and develop stringent national criteria for blood donor selection and deferral to exclude prospective donors at the risks of TTIs.(Patel et al., 2016)

Blood transfusion services have a duty of care towards blood donors as well to the recipients of transfusion, as well as responsibility to confirm test results and provide information, counseling and support to enable these individuals understand and respond to unexpected information about their health or risk status.(WHO, 2014)

Previously blood donor counseling was not widely practiced until relatively recently, some blood transfusion services (BTS) provided information to donors on TTI test results that were indicative of infection with syphilis and later as test became available, for HBV. During the HIV pandemic BTS recognized the importance of counseling to ensure blood safety (pre-donation/post donation counseling).(WHO, 2014)

The national BTS advocates for disclosure of TTI results to blood donors, through a written donation consent form if donors wish to be informed about reactive results. This is very important and essential for early clinical intervention to minimize their disease and the risk to the partners close contacts. Most blood banks discard reactive blood but do not inform or notify the donors due to lack of resources and trained counselors, hence there is very little information available about the counseling success.(WHO, 2013)

In Kenya, cases of blood recipients contracting TTIs from infected donors has been on the rise, a phenomenon that is attributed to the lack of screening and notification of Volunteers about their TTIs especially at the county level (Ochwoto et al., 2016).

To address this concern, WHO, (2014) recommends that every country should have a national blood policy which defines the principles and strategies for blood donor recruitment, selection and deferral, blood screening, confirmatory testing, notification, counseling and referral. The policy should define the requirements for the screening of all blood donations for markers for transfusion transmissible infections such as HBV/HCV, HIV, syphilis and malaria and the confirmatory testing of reactive screening test results. Currently there are gaps in Kenya national blood transfusion services, for instance there are no proper framework for ensuring blood donor counseling, screening and notification especially for school attending children. Screening and confirmatory testing For TTIs is



crucial for determining the suitability of donated blood for therapeutic use, notifying donors of positive TTIs test results and also for providing post-donation counseling. The healthcare providers are not supported in terms of human resource information/training, tools and facilitation for example airtime for recalling donors Kenya's Ministry of Health (WHO ,2014) guidelines include strategies (recommendations) for the notifying donors of their TTIs status, these include how to inform donors of their TTIs test results, especially donors who are below the national legal age of majority as part of the national counseling guidelines, ministry of health (2014) defines a standard mode of notification of blood donors who test positive for transfusion transmissible infection. Blood transfusion services may adopt different channels to inform or notify donors of test results of different infections such as HBV or HCV, For example in some counties in Kenya such as in Lamu county, test results for infections such as hepatitis Virus are given only in a face to face meeting in a safe and conducive environment with Proper counseling facilities. However, for other infections such as HIV, the results may be given in a standard letter, even though this may not be a requirement. (National Aids Control Council, 2015) Whichever mode of communication is used, it should protect the confidentiality and privacy of the notified donors.

### **1.2.1 Blood Donation**

Blood donation is when a person voluntarily allows blood to be drawn and used for transfusion or made into other blood products, donation may be of whole blood or specific components, after which only safe blood will be transfused. (WHO ,2014)

Donor counseling and notification is a confidential dialogue between donor and trained counselor, can be provided before, during or after blood donation, but TTI notification is done after the blood has been tested for various TTIs, whereby the donor is informed of any unusual results by informing them on all information regarding the positive TTI (transmission, implication to donor, treatment, prevention of further transmission, disclosure and excreta).(WHO, 2014)

### **1.2.2 Challenges to Notification**

Donor notification and post donation counseling are an essential aspect of the blood bank that entails serological status, in India 49.4% of donors with reactive TTIs were contacted successfully, the challenges faced were incomplete demographic donor details,(BIANCO & KESSLER, 1994). In India screening of blood is mandatory before issue but donors are not informed of their reactive status as part of donor care. (Kaur, Kaur, Basu, Kaur, & Sharma, 2013)

Donors with confirmed HIV infection are counseled in person while those with other positive markers are notified through letters, which some did not reach the donors due to insufficient address given by the donors, no mail receptacle among many others. There is ethical dilemma in disclosing TTI status on telephone or email, because there is no proper mechanism in place leading to healthcare workers facing serious consequences with some donors.(L P Choudhury & Tetali, 2007)

Some of the challenges faced in blood notification is lack of information by blood donors on their need or requirement to seek to know their TTI status after blood donation, most of them are not aware or don't have the information that they need to come back in order to be notified .47% of donors did not know that the blood bank was to give them their TTI results(L P Choudhury & Tetali, 2007).

Other challenges associated with lack of donor notification are absence of well-defined notification processes lack of consent forms, awareness,(Lincoln P Choudhury & Tetali, 2017).

### **1.2.3 Overview of Hepatitis**

Hepatitis is a general term that refers to “swelling of the liver” and its utmost common cause is the infection with 1 of the 5 viruses called Hepatitis A, B, C, D and E virus. HBV is the main cause of acute and chronic hepatitis globally (Trépo, Chan, & Lok, 2014). HBV belongs to a class of DNA viruses referred to as Hepadno-viridae and it is made of a core particle and the outer coat. Blumberg and his co-workers were the first to

discover the Hepatitis virus in 1965 and this came after the HBV surface antigen that was commonly stated as the Australia antigen due to the fact that it was discovered in an Australian's patient serum (Gerlich, 2013). As of late, the quick and constant revelations of the viral illness around the entire world have enhanced our comprehension of the multifaceted nature of this irregular virus (Matthews, Geretti, Goulder, & Klennerman, 2014). In spite of the fact that there has not been any significant lessening in the general predominance of HBV, there is the expectation that the future generation will see a decrease in both the overall carrier rate and the frequency of new HBV diseases if the new HBV vaccines are strengthened.

HBV Diagnosis is by screening blood for HBsAg surface antibody, antigen and core antibody, which is critical to diagnose HBV disease. Though the presence of HBV antigen demonstrates that an individual is infected, its presence can show recuperation and invulnerability from HBV infection, or a successful HBV infection. The antibodies appear at the beginning of an acute infection but might as well be because of presence of a chronic HBV infection.(Locarnini, Hatzakis, Chen, & Lok, 2015).

HBV remains one of the sexually transmitted infections that can be prevented by utilization of viable antibody used during immunization. Other measures that can be used to counter measure HBV is by avoiding exposure to use of unsafe blood since hazardous blood has been a route for HBV transmission in the world (WHO, 2015). Additionally the use of auto disable syringes (ADS) has lowered down the transmission of HBV through their use and because of increased utilization of intrusive therapeutic method which led to reduction of iatrogenic HBV disease.(Custer et al., 2004). Other than the mentioned prevention methods, theories on dental activities that cause oral mucous wounds might if present lead to transmission of HBV disease if steps to avert it are not taken (Medley, Lindop, Edmunds, & Nokes, 2001).

HBV can be treated by use of therapeutic agents, interferon-alpha (IFNa) and lamivudine (Matthews et al., 2014), Which is a powerful cytokine that has antiviral and immune modulating activities meant for HBV disease (Taylor et al., 2005)..The treatment is aimed

at reducing viral replication thus reducing the dangers associated with chronic HBV disease.

#### **1.2.4 Overview of HIV**

HIV is a virus that causes HIV infection and Acquired immunodeficiency syndrome (AIDS), which is the most advanced stage of HIV infection, it attacks and destroys the infection fighting immune cells, which whose loss makes the body weak and gradually develop most advanced stages of AIDS. (2020, 2016) HIV can be diagnosed by getting a blood test to check for presence of HIV antibody or antigen through rapid test kits and polymerase chain reaction test (PCR) respectively.

Prevention of HIV can be done by reducing risk of infection through use of condom, limiting number of sexual partners, not sharing of sharp objects, use of prophylaxis; pre and post exposure (PrEP and PEP) and prevention from mother to child (PMTCT). HIV is not transmitted through shaking of hands, hugging, sharing of objects like toilets, utensils, clothes, water, or mosquitoes and insect bites.(2020, 2016).

Treatment is given to HIV positive women to reduce cross infection to the un borne child, other HIV positive clients are treated with anti-retroviral therapy (ART) using antiretroviral (ARVs) medication which is taken daily for a life time. The medication reduces the risk of HIV multiplication and viral load.

Notification of HIV is case based where results are given to the client on a face to face arrangement after performing rapid and confirmatory tests.(2020, 2016)donors with confirmed HIV infection are counselled in person (N. & A., 2009).

#### **1.2.5 Overview of Syphilis**

Syphilis is a bacterial infection usually spread by sexual contact, often starting as a painless sore on the genitals, rectum or mouth, it spreads from person to person through skin or mucous membrane if it comes in contact with the sores. The bacteria can lie dormant for decades before becoming active again. Early syphilis can be cured easily, without treatment syphilis can become severe and damage the heart, brain, or other

organs and can be life threatening or be passed from mother to an unborn child (Bamdad, bagheri, & Zarei-Ghanavati, 2016).

Diagnosis of syphilis is done using non-treponemal test and treponemal test (detect damage and bacterium) using blood test within a week or two after exposure or more accurately after three months, other diagnostic methods are use of dark field microscopy for visual view of the bacteria. (Bamdad et al., 2016).

Correct use of condom remains the first line of defence against sexually transmitted infection like syphilis, or simply abstinence and reduction of sexual contacts (Bamdad et al., 2016).

Treatment is effective by use of antibiotics through injection (penicillin) or oral drugs (doxycycline, azithromycin, or ceftriaxone), or can be treated according to the infection stage, additional intervention may be required to repair damage.

Notification of syphilis requires written notification upon initial diagnosis within five days through a standardised form that shows client results and laboratory details for clinical and public health management.(Bamdad et al., 2016)

### 1.3 Problem Statement

Transfusion transmissible infections are a major global problem and are increasingly becoming a major mode of transmission of various diseases among blood recipients.(Kleinman et al., 2004). This is important in order for safe blood to be transfused to recipients, as unscreened blood can be a source of transmission or infection to the recipients.

Blood for transfusion is supposed to be screened for TTIs especially HBV/HCV, and other transmissible infections like HIV, and syphilis. This is important to prevent HBV/HCV, syphilis, HIV positive clients from transmitting the virus to healthy people,(*Blood Donor Counselling Implementation Guidelines In collaboration with,*

2014). After TTI screening the positive donors are supposed to be notified so that they can be deferred for care and treatment. A preliminary assessment done by the author reveals possible challenges in donor notification since the number of notified blood donors is negligible as compared to donors who were positive for TTIs.

A few previous studies focused on HBV prevalence in Turkana general population and none of the studies focused on donor notification of HBV with regard to blood donation. A part from a study highlighting on HBV prevalence which stood at 12.2% (“hepatitis turkana,” n.d.), while another study showed HBV prevalence at 8.8%. Therefore, this study will seek to find out how many donors donated blood in the selected study years, to find out how many of the donors were TTI positive, how many were notified, and what were the challenges faced by healthcare workers in blood donor notification, to blood donors attending Lodwar County and referral hospital blood bank facility.

## **1.4 Research Objectives**

### **1.4.1 Main Objective**

To identify the challenges faced by healthcare workers in transfusion transmissible infections notification process to blood donors in Lodwar County and referral hospital blood bank.

### **1.4.2 Specific Objectives**

- i. To determine the proportion of blood donors infected with any transfusion transmissible infections between Jan 2017 and Dec 2018.
- ii. To assess the number of notified and un-notified blood donors who were positive for any transfusion transmissible infection from January 2017 to December 2018
- iii. To identify challenges faced by blood bank healthcare workers in notifying blood donors about their TTIs status.

## **1.5 Research Questions**

- i. How many blood donors were HBV/HCV, syphilis and HIV positive in the selected years?

- ii. How many HBV/HCV, syphilis and HIV positive blood donors were notified and not notified?
- iii. What are the challenges faced by blood bank healthcare workers in notifying clients about their positive TTIs status?

### **1.6 Scope of the Study**

The project was implemented in Lodwar county and referral hospital (LCRH). The facility is located in Lodwar town, which is the head quarter of Turkana County. LCRH is surrounded by other sub counties such as; Turkana north, Turkana south, Turkana East, and Turkana West. The LCRH is a level 4 facility offering curative, preventive, and rehabilitative health services to around 1,000,000 people.

Even though there are several health institutions, both private and public in Turkana, this study will be limited to only LCRH blood bank satellite, it is the only blood bank satellite within the region, serving clients that need blood or blood products, who are being attended to in the various health facilities.

This is because it is the largest public health care organisation in Turkana County and attends to most of the population in the area especially those in need to donate blood and need of blood transfusion services. The study will cover HBV/HCV, HIV and syphilis as some of transfusion transmissible infections while the study sample to be used will be limited to health care providers attending to donors attending LCRH. The study will also explore the number of donors informed and notified on their status by examining data on donor notification forms in the sampled years, and will cover a period of one month for data collection.

### **1.7 Significance of the Study**

One of the important Sustainable Development Goals (SDG) is to eradicate all forms of transfusion transmissible diseases by 2030, of which are HBV, HCV and HIV. As such, a study on the current state of notification of donors about their HBV, HCV and HIV status, in a region that is known to have one of the highest incidences of infection would

help in promoting healthy lifestyles and make an important contribution to individual and community health. In addition, donor screening and notification will help in the early diagnosis and treatment of TTIs while preventing healthy recipients from contracting the viruses through unsafe blood transfusion. For the infected blood donors, this will offer a crucial early entry point for the treatment and their subsequent care. In effect screening and notification will assist in delaying or preventing the development to full-blown disease or complications. Understanding the gaps in donor screening and notification will contribute to the continuum of care in the health system through policy formulation that will be aimed at preventing and containing the TTIs in all blood banks satellite as well as in Turkana County. Understanding the challenges encountered by healthcare service providers in sensitizing the blood donors and the public about the TTIs will help in giving appropriate recommendations to the relevant authorities for appropriate intervention. In the long run, this will help in contributing toward the SDG 3.3 of eliminating or at least cut down on the cases of transfusion transmissible complications.

Other researchers and academicians will benefit by undertaking other research on relevant issues related to blood transfusion services especially on the limitations of the study.





## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter comprises of theoretical, empirical and analytical framework, the literature review is aimed at bringing out or informing of existent donor notification knowledge and the existing gaps.

Counseling informs donors on unusual test results, timely notification and counseling on TTIs status is necessary for early clinical intervention and risk reduction (Kotwal, Doda, Arora, & Bhardwaj, 2015a)

TTIs donor notification is essential for early clinical intervention to minimize their disease and risk to the partners or close contacts, protocol requires each reactive donor to be informed about the abnormal results, counseled and referred for further confirmation and management, this is not the case in India where most infected blood is discarded without notifying the donors due to lack of resources and trained counselors hence there is little information available about counseling success rates and referral care.(Kotwal, Doda, Arora, & Bhardwaj, 2015b)

Absence of a well-defined notification process leads to discarding of blood and in the end leaving the donor without information of TTIs status. Issues of not on filling donor forms are high, and lack of awareness in blood donors if they need to be informed of their results were some of the challenges faced. (Lincoln P Choudhury & Tetali, 2017)

#### **2.2 Theoretical Foundation**

The study was anchored based on the Theory of Planned Behavior (TPB) as one of the models mostly used in literature to explore behaviors (in recycling, travel mode, energy consumption to name but a few). Armitage and Conner identified its application in 154 different context.(Bardus, 2012).

The theory helps to understand how we can change the behaviour of people and predicts deliberate behaviour, since behavior can be planned. It is the successor of the Theory of

Planned Action (Fishbein and Ajzen 1975; Ajzen And Fishbein 1980). The succession was a result of the discovery that behavior is 100% voluntary and under control. This resulted in the addition of perceived behavioral control - hence the Theory of Planned Behaviour(Bardus, 2012)

The theory of planned behavior is a theory that links one's beliefs to one's behaviour. The theory states that attitude toward behaviour, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors.(Bardus, 2012). It is founded on the three considerations Behavioral Beliefs: beliefs about the likely consequences of the behaviour. Normative Beliefs: beliefs about the normative expectations of others, and Control Beliefs: beliefs about the presence of the factors that may facilitate, or may impede, the performance of the behaviour.

The TPB assumes that the best prediction of behaviour is given by asking if one intends to behave in a certain way, hence intention does not express the behaviour when it is difficult to perform because of unexpected barriers.

How can an intention be explained by behaviour? This can be explained by; attitude, subjective norm and perceived behaviour control. The model illustrates that subjective norms and perceived behaviour control predict the intention thus influence behaviour. E.g. in donor notification variables related to place, policy, people etc., influence donor notification through the three determinants. (Bardus, 2012)

Perceived behaviour control is the skills needed to express the behaviour and possible outcome barriers, so a direct influence of perceived behaviour control on behaviour is supposed. Actual behaviour leads to feedback of expected behaviour .In relation to donor notification, the theory assumes that, the healthcare workers make decision of donor notification according to the challenges they face, through a rationale of Self interest. Understanding human behaviour, rational behaviour result in progress of cognitive decision. Internal factors e.g. attitude influence behaviour, policy intervention should

seek to ensure healthcare workers are supported within a framework to facilitate donor notification. (Bardus, 2012)

However there is critique on this theory based on arguments that;

Human behaviour is extremely complex consisting of social, moral and altruistic behaviour as well as self-interest, Behaviour is embedded in collective and social decision making context and other contextual factors which continually shape and constrain individual interest. (Bardus, 2012).

Simon refers habits and routine as procedural rationality, which by pass cognitive deliberation and undermine key assumptions of models Emotional or affective responses confound cognitive deliberation.

### **2.3 Empirical Review**

Blood donation and transfusion is vital as well as a lifesaving intervention, though there are risks of TTIs, the risk of TTI estimated for HIV at 1 in 493,000; for HVC 1 in 103,000, for HBV 1 in 63000. Due to this high prevalence, there is a need to inform and counsel the donors about the TTI status in order to prevent them from donating blood in the future. (“Donor Notification Letter - UNICEF.PDF,” n.d.)

The first donor Notification of positive results was obtained during donor screening process, following introduction of syphilis screening in the 1940s whereby notification was done within 24hrs, which is still the ideal, practice today. Later the development of HBV screening in late 1960’s changed the responsibility of donor follow up. From public health system to the blood bank through letter follow up, communication of positive TTI is not a universal procedure due to the believe that donor counseling belongs to other sectors of healthcare system. (BIANCO & KESSLER, 1994)

Counseling and notification of un-usual blood test results to blood donors is a mandate of healthcare workers and is necessary for clinical intervention and risk reduction for TTI positive blood donors. Donor counseling in 1994 guidelines was on HIV notification only

but later collaborative effort were put by international Federation of red cross and red crescent societies (IFRC), world health organization (WHO) global program on AIDS and the united states centers for disease control and prevention (CDC), to Include or encompass other TTI as well as other medical conditions that might compromise donor health, by reviewing and updating guidelines to include other TTI and donor health and safety issues.

*(Blood Donor Counselling Implementation Guidelines In collaboration with, 2014)*

Limited research on challenges to notification has been done in a few countries; in India and china. In some countries like china, lack of notification led to catastrophes related to of blood being positive for TTI, it put up policy and measures which enhanced blood safety through donor screening and notification.(Li et al., 2017) the government increased attention to blood policy through initiation of policies and measures that enhance safe blood supply to meet the basic clinical demand. Strategies employed included, donor screening (selection, questionnaire, physical examination, initial rapid donor testing) and testing (direct pathogen detection and serological tests) done in the satellite laboratory. Benefits included reduction in turnaround time (TAT), only eligible donated blood; they also innovated in testing technologies to improve screening parameters. (Li et al., 2017)

Many blood has been discarded without the donors being notified due to lack of resources, challenges in communication of donor results, lack of information or awareness among blood donors and healthcare workers of the need to notify, in a couple of studies done in India.(Patel et al., 2016). A study done in India highlighted Challenges in communication of donor results which included lack of address, no mail receptacles, unable to forward messages due to expiry of forwarding time, Some donors only come back because they want to donate again.(N. & A., 2009)

Use of social network sites across the world is increasing and blood donor apps (BLOODR by Neologix) have been developed to fast track donor requirement. Finding blood donor notification app is challenging meaning donors might not be notified through

existing apps which are biased towards donor search and matching.(Tatikonda & El-Ocla, 2017).

Donor notification is a hemo-vigilance activity aimed at reducing the risk of transmission and early treatment of the infected clients.(M., 2013) Hemo-vigilance has only been effected by 13 out of 46 countries in Africa, hence scanty published data is available that often do not support policy formulation. 10% of blood that is TTI positive is discarded in Africa, translating to 1.6million units, Despite the above studies In Africa, evaluation of true extent of TTIs is affected by structural problems equally affecting blood transfusion itself, this include inconsistent testing strategies, lack of computerized records and lack of surveillance system among many other reasons.(Barro et al., 2018)

Risk of TTI infection in Congo alone is 6/1000 HIV, 79/1000, HBV and 31/1000 HCV infection per 1000 donations, a majority of this is due to lack of donor notification leading to donors repeating donations.(Barro et al., 2018), most donors repeat donation exercise since most of them were previously not notified of any positive TTI due to challenges faced by healthcare workers in donor notifications.

Kenya health policy, 2014-2030 dictates need for improvement in health status in line with the constitution of Kenya 2010, health sector is committed to ensure attainment of highest standards of health in a manner responsive to needs of the people.(Ministry of Health, 2014). In Kenya HIV, HBV, HCV, and Syphilis infected blood are 2.4%, 3.1%, 2.3%, and 1% respectively and are discarded due to the TTIs (a study done in Kisumu blood bank under the Kenya national blood transfusion services).(Wamamba et al., 2017) In Nyeri, TTI sero- prevalence was 5%, 3%, 3%, and 1% for HIV, HBV, HVC and Syphilis respectively, a clear show of need for donor notification.(Herbert, 2016)

## **2.4 Blood Donor Notification**

Blood from donors is supposed to be tested and screened for TTIs before transfusing to the recipient. Determining blood donors who are TTI positive is first paramount before blood is transfused

To find how many of the donors who were TTI positive were notified and not notified, is key, as illustrated in cited studies above, only a small percentage of blood donors are notified of their TTI status due to various challenges faced by both healthcare workers and donors. (Unpublished, data source)

The challenges faced are widely spread, from lack of information by both the donor and healthcare worker, where the health care worker has not been trained on how to inform the donor of TTI status, while the donor do not know if they require to be informed of their TTI status, some policy is not clear on how notification can be done especially regarding blood donors of school going age between 16 and 17 years. Lack of TTI screening in the facilities also hinder donor notification since there is an increased turn around time between when the donor donates blood up to the time results are sent back from the testing laboratory. (Patel et al., 2016)

## **2.5 Analytical Framework**

The framework below shows the interrelationship between various factors contributing to challenges in donor notification, which are related to place, provision, policies, procedures and provision. The dependent variable is the challenges faced by health care workers on blood donor notification of TTIs status. The independent variables include; factors related to:

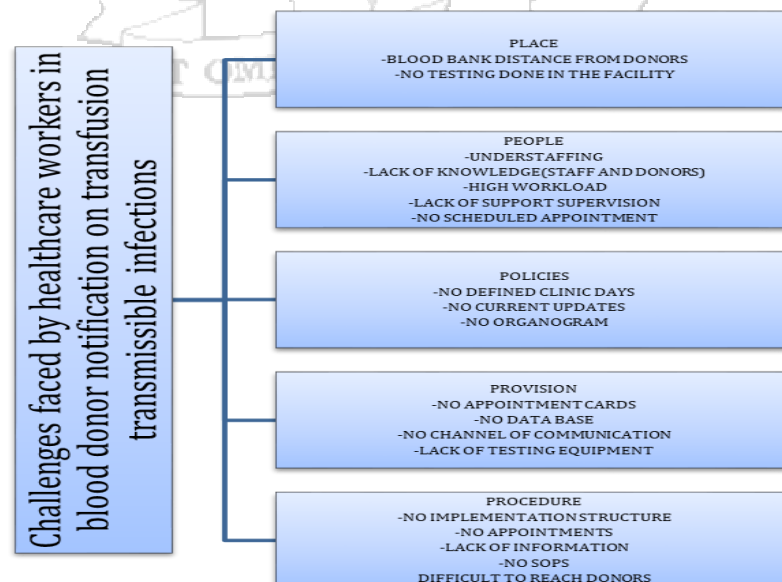
Place whereby donor notification is hindered by lack of TTIs testing in the blood bank since the TTI screening is done in another testing facility meaning there is some time lapse between when the donors are bled and when they get back their TTI results, and distance or location of blood bank satellite from the blood donors whereby some donors or most of them come from far to donate blood and once they go back to their residence they might not come back just for notification purposes.

People in that, there is lack of understanding or knowledge on TTIs notification in both donors and healthcare workers, donors might be having information on need for TTI notification but do not know the importance of actual TTI notification, issues of shortage

of human resource and high workload whereby a few healthcare are working in the blood bank and mostly concentrate on other blood bank activities, lack of support supervision which only done by the national blood transfusion services management committee ,and weak or no appointment system where donors are not given any appointments for donor notification services.

Policy related factors that range from lack of donor notification policy especially for school going donors, notification on other TTI is provided but not that for HBV, lack of organogram meaning no structure showing who is responsible for donor notification, unstructured clinic days which are specific for donor notification, and lack of current updates on blood notification processes.

There is no clear communication channel from healthcare workers to blood donors, lack of a database showing who has been notified and not notified, appointments cards to show when the donors need to come to the clinic for TTI notification, among many other provisions, and lack of procedures e.g. standard operating procedures showing steps in donor notification, donor appointment and lack of information on donor notification for both healthcare workers and blood donors. Both the cause and effect variables are presented inform of an analytical framework diagram below.



**Figure 2.1: Analytical Framework**

Source: Author, 2019

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This study utilized a cross-sectional design method where quantitative data was collected. Secondary data was archived for two years to address research question 1 and 2, while question 3 was addressed through administering a survey questionnaire. It illustrates the research design employed, study population and sampling, data collection methods, how data was analyzed, data validity and reliability and ethical considerations of the study.

#### **3.2 Research Design**

The study adopted purposive sampling whereby relevant healthcare workers who attend to blood donors attending Lodwar county and referral hospital blood bank satellite, deputy director for medical services, LCRH CEO and his deputy, the county laboratory coordinator, who responded to a self-administered survey questionnaire (a total of 14 respondents). The questionnaires had twenty questions corresponding to the different factors that were causing challenges to TTI donor notification. Secondary data was tabulated using excel sheet for the selected years, to include; total Number of donors who donated and screened for TTIs, notified and not notified were captured and tabulated.

#### **3.3 Study Population and Sampling**

The study population for secondary data was drawn from an existing donor records that was sampled for two years to include all donors that ever donated blood in the two years, the donors were further separated to those who were TTI positive, and those who were notified and not notified for the two years. Primary data population was from all healthcare workers associated and work in the blood bank satellite, where they were required to fill a twenty question questionnaire focusing on the challenges faced in donor notification which were grouped into five factors; place, provision, procedures, policies and people.



### **3.4 Data Collection Method**

Secondary data on number of all donors who attended Lodwar County and Referral Hospital, infected with HBV, or HCV or HIV or Syphilis, those notified and not notified between Jan 2017 to Dec 2018 was collected and tabulated in excel sheet and summarized using tables. Primary data using a Survey questionnaire on a likert scale was administered to healthcare workers working in the blood bank, deputy director for medical services, county laboratory coordinator and LCRH CEO and his deputy and their responses coded using excel sheet. The questionnaire had a total of twenty questions focusing on blood bank processes of blood donor notification, policies issues affecting donor notification, both healthcare workers and donors themselves as people orientation, provision of donor notification tools and procedures on notification process , and distance of blood bank from the donors to name just a few as some of the factors that could have contributed to the challenges faced by healthcare workers in blood donor notification of their TTI status.

### **3.5 Data Analysis**

Statistical Package for Social Sciences (SPSS) was used to perform the quantitative analysis for primary data, where means, standard deviation and regression analysis were used to highlight the findings. While excel application was used to analyze secondary data that summarized all donors who donated blood for the selected years, those who were TTI positive and those who were notified and not notified. The methodology involved the utilization of tables to explain various variables. Primary data was analyzed as per the question response from all the 14 respondents to ascertain their percentage of agreeableness through computation of means, standard deviations and regression analysis. The secondary data was analyzed in tables showing donor positivity and those notified and not notified for specific TTI and for specific years, followed by a narrative for both presentations.

### **3.6 Validity**

Other researchers and policy makers will expand and develop current and updated factors associated with donor notification will use findings from this study.

Concept of cause and effect validity was used in this study, whereby the researcher developed the questionnaire based on the factors highlighted by past studies, pilot questionnaire was administered to aid in identifying items in research questionnaire that in order to elicit relevant information. This was modified to ensure correctness and understanding of the anticipated data.

### **3.7 Reliability**

The reliability of the study was guaranteed by factoring in available population and competently sufficient and relevant existing data from a reliable source, the use of secondary data.

A pre-test of the questionnaire was conducted in Lodwar County Referral Hospital blood satellite and SPSS was used to assess reliability to generate the means and standard deviations of challenges faced, also the data analysis methodology that was used to arrive into findings of the study makes the study findings reliable.

### **3.8 Ethical Considerations**

Consent for the Strathmore University Institutional Ethic Review committee (SU-IERC) committee was sought for that paved way for National Commission for Science Technology and Innovation (NACOSTI) certification for data collection. Lodwar county and referral hospital CEO received and forwarded the research introduction letter to allow data collection at Lodwar blood bank satellite. An Informed consent form was attached alongside the questionnaire for the staff to read through and consent by signing before responding to the questionnaire.

## CHAPTER FOUR

### PRESENTATION OF RESEARCH FINDINGS

#### 4.1 Introduction

This chapter presents the findings of the study; it contains responses on agreeableness on challenges facing health care workers in blood donor notification of their TTI status, it also shows finding on secondary data answers in line with research objectives and questions of how many donors were TTI positive, notified and not notified. The findings are presented in the form of tables, graphs and pie charts.

#### 4.2 Secondary Data Analysis

Data for all donors that ever donated blood in the blood bank satellite was tabulated in an excel sheet, review was done for January 2017 to December 2018 and summarized as shown below.

**Table 4.1: Total donor positivity by year and gender**

Year	Donors	Male			Female		
		Positive	Notified	Total	Positive	Notified	Total
2017	1907	138 (7.2%)	1(0.7%)	1281	58(3.0%)	2(3.4%)	626
2018	2089	86(4.1%)	6(7%)	1533	15(0.7%)	1(6.7%)	556
Total	3996	224(5.6%)	7(3.1%)	2814	73(1.8%)	3(4.1%)	1182

A total of 3996 donors donated blood in the 2-year period; the TTI positivity for the two years was 224 and 73 for males and females respectively giving a total of 297 donors being positive for TTI. In 2017 only 1(0.7%) male and 2(3.4%) female were notified. In 2018 only 6(7%) male and 1(6.7%) female were notified. In total 7(3.1%) and 3(4.1%) male and female respectively were notified for positive TTIs.

**Table 4.2: Notified donors**

Year	Total donors	Male			Female		
		Positive	Notified	Not notified	Positive	Notified	Not notified
2017	1907	138 (7.2%)	1(0.7%)	137(99.3%)	58(3.0%)	2(3.4%)	52(96.6%)
2018	2089	86(4.1%)	6(7%)	80(93%)	15(0.7%)	1(6.7%)	14(93.3%)
Total	3996	224(5.6%)	7(3.1%)	217(96.9%)	73(1.8%)	3(4.1%)	70(95.9%)

The table shows that 7.3% of male who were TTI positive were notified with the not notified being at 96.9% rate. The females who were notified were 4.1% against the not notified whose rate was at 95.9%. This means that many donors are left out without being notified and their blood is discarded since they are unfit for transfusion purposes.

**Table 4.3: TTI positivity summary for 2017 and 2018**

	YEAR				AVERAGE	
	2017		2018		2017/2018	
TTI	Total	%	Total	%	TOTAL	%
HIV	26	1.36	10	0.48	36	0.9
HBV	126	6.61	84	4.0	210	5.31
HCV	35	1.84	2	0.10	37	0.97
SYPH	4	0.21	0	0.00	4	0.10
HIV/HBV	1	0.05	1	0.05	2	0.05
HIV/HCV	2	0.10	1	0.05	3	0.08
HBV/HCV	2	0.10	0	0.00	2	0.05
HCV/SYPH	0	0.00	3	0.14	3	0.07
TOTAL		10.28%		4.83%		7.4%
	1907					
	2089					

The table clearly shows that TTI overall positivity was at 7.45 and TTI positivity for 2017 was high than that of 2018(10.28 % and 4.83%) respectively, it is not clear why there was high TTI positivity in 2017. Also the overall positivity for HBV was higher in 2017 than in 2018, it means HBV positivity is high and is common in blood donors.

### 4.3 Primary Data Analysis

#### Introduction

The primary data was analysed using SPSS software whereby means and standard deviation of all responses were derived to show healthcare worker agreeableness on factors that were causing lack of donor notification. Regression was used to illustrate if indeed the factors discussed were related to challenges faced by healthcare workers in donor notification.

**Table 4.4: People as a barrier faced by health care workers**

Statements on people	N	Mean	Std. Deviation
Human resource is a challenge to blood donor notification.	14	3.9286	.99725
Lack of knowledge by healthcare workers on donor notification processes is a major challenge.	14	2.2143	1.12171
Lack of knowledge by blood donors on their need to know their transfusion transmissible infection status contributes to lack of concern in knowing their transfusion transmissible status.	14	3.5000	1.34450
High workload in the blood bank affects time allocated for donor notification services due to shortage of staff.	14	3.7857	1.05090
There is no support supervision by supervisors to blood bank healthcare workers on blood bank and donor processes.	14	2.5000	.94054

From Table 4.4, the findings indicated that majority of the respondents agreed that Human resource was a challenge to blood donor notification as revealed by a mean of

3.9286 and a standard deviation of .99725. A large number disagreed that there was lack of knowledge by healthcare workers on donor notification processes is a major challenge as indicated by a mean of 2.2143 and a standard deviation of 1.12171. Most of the respondents agreed that there was lack of knowledge by blood donors on their need to know their transfusion transmissible infection status contributes to lack of concern in knowing their transfusion transmissible status as revealed by a mean of 3.5000 and a standard deviation of 1.34450. A large number agreed that high workload in the blood bank affected time allocated for donor notification services due to shortage of staff as shown by a mean of 3.7857 and a standard deviation of 1.05090. Majority disagreed that there was no support supervision by supervisors to blood bank healthcare workers on blood bank and donor processes as indicated by a mean of 2.5000 and a standard deviation of .94054.

**Table 4.5: Procedure as a barrier faced by health care workers**

Statements on procedure	N	Mean	Std. Deviation
Lack of donor appointments and no scheduled donor notification clinic days contributes to failure in donor notification.	14	3.7571	1.33631
There are no current study updates on blood donor notification challenges both in literature and local content meaning no reference to strengthen donor notification.	14	3.8857	.99449

Table 4.5 indicates that majority of the respondents agree on whether there was lack of donor appointments and no scheduled donor notification clinic days contributes to failure in donor notification as revealed by a mean of 3.7571 and a standard deviation of 1.33631. A large number were uncertain if there were no current study updates on blood donor notification challenges both in literature and local content meaning no reference to strengthen donor notification as shown by a mean of 3.8857 and a standard deviation of .99449.

**Table 4.6: Provision as a barrier faced by health care workers**

<b>Statements on provision</b>	<b>N</b>	<b>Std.</b>	
		<b>Mean</b>	<b>Deviation</b>
Lack of equipment for screening transfusion transmissible infections in the blood bank satellite affects donor notification process since blood is screened at a different site or region.	14	3.7714	1.49174
The donors are not given appointment cards in the Lodwar blood bank satellite hence no schedule for notification.	14	3.1429	1.29241
There is no database on blood donor information in Lodwar blood bank satellite where blood donor records are kept regarding donation processes.	14	1.9286	.91687
Utilization of blood donor notification services is minimal due to lack of a clear communication channel between the donors and healthcare workers.	14	2.4286	.93761
Lack of clear records of notified and UN notified blood donors makes it difficult to ascertain which donors are to be notified or not.	14	2.1857	1.12171
Blood donors are not given appointments as a routine practice in the blood bank thus they forget to return for notification incase of positive transfusion transmissible infection.	14	3.8571	1.16732
There is difficulty in reaching the donors either through phone or due to long distance making it difficult to facilitate effective donor Notification process.	14	4.2143	1.05090

From the findings in Table 4.6, majority of the respondents agreed that there was lack of equipment for screening transfusion transmissible infections in the blood bank satellite affects donor notification process since blood is screened at a different site or region as shown by a mean of 3.7714 and a standard deviation of 1.49174. A large number were also undecided of whether the donors are not given appointment cards in the Lodwar blood bank satellite hence no schedule for notification as indicated by a mean of 3.1429 and a standard deviation of 1.29241. Majority disagreed that there was no database on

blood donor information in Lodwar blood bank satellite where blood donor records are kept regarding donation processes as revealed by a mean of 1.9286 and a standard deviation of .91687. Most disagreed that the utilization of blood donor notification services was minimal due to lack of a clear communication channel between the donors and healthcare workers as indicated by a mean of 2.4286 and a standard deviation of .93761. A large number disagreed that there was lack of clear records of notified and UN notified blood donors makes it difficult to ascertain which donors are to be notified or not as shown by a mean of 2.1857 and a standard deviation of 1.12171. Most agreed that blood donors were not given appointments as a routine practice in the blood bank thus they forget to return for notification incase of positive transfusion transmissible infection as revealed by a mean of 3.8571 and a standard deviation of 1.16732. A large number agreed that there was difficulty in reaching the donors either through phone or due to long distance making it difficult to facilitate effective donor Notification process as indicated by a mean of 4.2143 and a standard deviation of 1.05090.

**Table 4.7: Place as a barrier faced by health care workers**

<b>Statements on place</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Screening tests and Procedures are not conducted in the Lodwar blood bank satellite thus increasing turnaround time for donor notification.	14	3.7857	1.25137
The blood bank satellite is far from the donors since donors travel from a far and thus impossible for them to return for notification.	14	4.0714	.47463

Table 4.7 reveals that a large number of respondents agreed that screening tests and Procedures are not conducted in the Lodwar blood bank satellite thus increasing turnaround time for donor notification as shown by a mean of 3.7857 and a standard deviation of 1.25137. Majority agreed that the blood bank satellite was far from the donors since donors travel from a far and thus impossible for them to return for notification as revealed by a mean of 4.0714 and a standard deviation of .47463.



**Table 4.8: Policies as a barrier faced by health care workers**

Statements on policies	N	Std.	
		Mean	Deviation
There is no clear donor notification implementation structure in the blood bank satellite with regards to standard operating procedures.	14	3.7000	1.24035
There is no standard blood bank notification policy especially for school going blood donors of ages 16 and 17 years, making it difficult to notify incase of positive transfusion transmissible infection.	14	3.9429	1.29241
There is no organogram in the blood bank satellite though the policy stipulates so, its lack in the blood bank leads to healthcare worker non responsibility attitude since there is no direction given on who is supposed to notify donors on their transfusion	14	3.5714	1.08941
Lack of defined clinic days makes it difficult for healthcare workers to allocate time and day dedicated to donor notification.	14	3.7857	1.05090

From the findings, majority of the respondents agreed that on there being no clear donor notification implementation structure in the blood bank satellite with regards to standard operating procedures as revealed by a mean of 3.7000 and a standard deviation of 1.24035. A large number were agreed of there being no standard blood bank notification policy especially for school going blood donors of ages 16 and 17 years, making it difficult to notify incase of positive transfusion transmissible infection as indicated by a mean of 3.9429 and a standard deviation of 1.29241. Majority agreed that there was no organogram in the blood bank satellite though the policy stipulates so, its lack in the blood bank leads to healthcare worker non responsibility attitude since there is no direction given on who is supposed to notify donors on their transfusion as shown by a mean of 3.5714 and a standard deviation of 1.08941. A large number agreed that there was lack of defined clinic days makes it difficult for healthcare workers to allocate time

and day dedicated to donor notification as revealed by a mean of 3.7857 and a standard deviation of 1.05090.

#### 4.4 Multiple Regression Analysis

To determine whether independent variables affect the dependent variable, multiple regressions were used. To achieve this, blood donor notification of TTIs status as the dependent variable was regressed against five factors contributing to challenges in donor notification, which were related to place, people, policies, procedures and provision. Place whereby donor notification is hindered by lack of TTIs testing in the blood bank and distance or location of blood bank satellite from the blood donors. People in that, there is lack of understanding or knowledge on TTIs notification in both donors and healthcare workers, issues of shortage of human resource and high workload, lack of support supervision and weak or no appointment system. Policy related factors that range from lack of donor notification policy especially for school going donors, lack of organogram, unstructured clinic days, and lack of current updates on blood notification processes. Provision where there is no clear communication channel from healthcare workers to blood donors, lack of a database, appointments cards among many other provisions. Lack of procedures e.g. standard operating procedures, appointment and lack of information on donor notification for both healthcare workers and blood donors. The regression model for this study generally assumed the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where: Y = Blood donor notification of TTIs status,  $\{\beta_i; i=1,2,3,4,5\}$  = The coefficients for the various independent variables  $X_i$  for;  $X_1$  = Place,  $X_2$  = People,  $X_3$  = Policies,  $X_4$  = Procedures,  $X_5$  = Provision,  $e$  = Standard error. In the model  $\beta_0$  is the constant term while the coefficients  $\beta_1$  to  $\beta_5$  were used to measure the sensitivity of the dependent variable (Y) to unit change in the independent variable ( $X_1, X_2, X_3, X_4$  and  $X_5$ ).  $e$  is the error term which captured the unexplained variations in the model.

This section examined whether the multiple regression equation can be used to explain the challenges to blood donor notification on transfusion transmissible infections in Lodwar County and Referral hospital blood bank satellite.

**Table 4.9: Model Summary**

		Adjusted	Std. Error of	Change Statistics			Durbin-
R		R Square	the Estimate				Watson
R	Square			F Change	df1	df2	
0.78	.6084	.56	.64593	34.974	1	13	2.090

a. Predictors: (Constant), Place, People, Policies, Procedures and Provision

From the results obtained, an R of 0.78 shows that there is a positive correlation between challenges to blood donor notification and blood donor notification of TTIs status. The coefficient of determination (r-squared) of 0.6084 indicates that 60.84% of blood donor notification of TTIs status can be explained by place, people, policies, procedures and provision. The findings on ANOVA results on challenges to blood donor notification and blood donor notification of TTIs status are presented in Table 4.10.

**Table 4.10: ANOVA Results**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	85.206	1	21.302	65.888	.000 <sup>b</sup>
	Residual	135.787	13	.323		
	Total	220.993	14			

a. Dependent Variable: Blood donor notification of TTIs status

b. Predictors: (Constant), Place, People, Policies, Procedures, Provision

The Analysis of Variance (ANOVA) indicated a p-value of 0.000. This, therefore, means that the relationship between challenges to blood donor notification and blood donor notification of TTIs status was significant at 95% confidence level. The F statistics of 65.888 was large enough to conclude that the set of variables have a significant influence on blood donor notification of TTIs status. This implies that  $X_1$  = Place,  $X_2$  = People,  $X_3$  = Policies,  $X_4$  = Procedures and  $X_5$  = Provision, are significant predictors at explaining

blood donor notification of TTIs status and that the model is significantly fit at 95% confidence level.

**Table 4.11: Model Coefficients on challenges to blood donor notification**

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	1.653	.129		12.835	.000
Places	.140	.047	.186	2.994	.003
People	.144	.055	.183	2.621	.009
Policies	.104	.049	.135	2.120	.035
Procedures	.173	.044	.210	3.941	.000
Provision	.180	.047	.256	3.999	.000

a. Dependent Variable: Blood donor notification of TTIs status

Further analysis as shown in Table 4.11 shows that places had a coefficient of 0.140, people had a coefficient of 0.144 while policies had a coefficient of 0.104 and procedures had a coefficient of 0.173 while provision had a coefficient of 0.180. From the coefficients, the model developed was as follows;

Blood donor notification of TTIs status = 1.653 + 0.140 Places + 0.144 People + 0.104 Policies + 0.173 Procedures + 0.180 Provisions.

The beta Coefficients in the regression shows that all of the tested variables had positive relationship with blood donor notification of TTIs status. The findings show that all the five variables tested were statistically significant with positive beta coefficients.

## **CHAPTER FIVE**

### **DISCUSSION, CONCLUSION, RECOMMENDATIONS, LIMITATIONS**

#### **5.1 Discussion**

This section offers to explain the study findings, conclusions and recommendations according to the findings of the study in relation to study problem and study objectives. It also gives insight on to the limitations of this study together with suggestions for further research work recommendations

#### **5.2 Findings in Relation to the Objectives**

A total of 3996 donors, donated blood in in the two study years, 297 (7.6%) donors (224 & 73 male & female) respectively were positive for TTIs. Only 10(3.4%)were notified. This means there are blood donors who are TTI positive with only a few being notified, this shows that the healthcare workers are facing challenges that make them not notify TTI positive donors. These findings are in agreement with studies done in Africa showing that 10% of donated blood is discarded due to TTI positivity, likewise TTI positive donor blood is discarded without notifying donors in Lodwar county and referral hospital. (Barro et al, 2018).

In summary, in 2017 a total of 196 donors were TTI positive with only 3 and 193 notified and not notified respectively, while a total donors with TTI positive for 2018 were 101 with only 7 of them notified leaving 94 not notified in LCRH Blood bank satellite. A total of 224 males and 73 females were positive for the TTIs. All these studies in addition to the current study in LCRH blood bank satellite are in agreement that TTI positivity is indeed one of the reasons why blood is being discarded hence need for notification.

Positivity for all TTI was 10.28% in 2017 and 4.83% in 2018, this clearly shows a drop in TTI positivity, it is not clear why the TTI positivity was high in 2017 than in 2018, this could be attributed to may be change in donor age group population, may be change in blood donation strategy for example where family replacement is a source of donor blood,

TTI positivity was high for HBV (5.35%) for the two years than the other screened TTIs; this means there is a HBV infection among blood donors than positivity for other TTIs, though not explored in this research it means there could be an underlying reason as to why HBV infection is higher than other TTIs, reasons could range from lack of routine screening for HBV, lack of awareness on HBV existence and information, cultural or social issues among many more reasons, just like the findings in Kisumu and Nyeri that showed a high HBV infection as higher than other blood donor TTIs. (Wamamba et al., 2017), (Herbart, 2016). This high positivity could be high because of study population bias as found out by other HBV prevalence studies in Kenya that showed disparity of HBV prevalence by geographical area where it was found out that HBV was 11.2% in Eastern Kenya and 8.8% in Turkana county. Though this studies highlighted HBV high prevalence, there might be a high positivity in a health care setting as found by Pettigrew and others due to bias, and other studies found that 77% of patients in Kenyatta with liver cirrhosis had HBV. (Ly et al., 2016).

High TTI positivity was also noted in males at a rate of 5.6% and low in females at a rate of 1.8%, this means that was high in males than females, it is not clear why males are highly infected by the TTIs, maybe they form a high number of donors which was not studied in this research.

Though there is bias in study population in this study, there is a concern in order to find out the true HBV positivity or prevalence among the general population in Turkana county, as the prevalence study was done about 10 years ago, (Ly et al., 2016).

Current study on HBV prevalence should be done to ascertain HBV trends. Other questions raised by the findings of this study are, what could be the reason of high HBV infection among blood donor male population than their female counterparts? What could be the risk factors associated with HBV infection? Risk factors may be related to Cultural, behavioral, educational and traditional factors, screening dynamics, this can only be ascertained through a study focused on HBV prevalence and risk factors associated with HBV infection.

The study also sought to find challenges faced by healthcare workers in blood donor notification, the challenges were grouped into five factors that were causing lack of donor notification, the factors were: place, provision, policies, procedures and people. The questionnaire was administered to a total of fourteen respondents whose response finding was as follows.

On factors associated with people, Respondents agreed that human resources was a challenge faced by healthcare workers with a mean of 3.9286 and a standard deviation of 0.99725, while a large number disagreed with the statement that there was lack of knowledge of donor notification among healthcare workers meaning that the healthcare workers were aware and had knowledge that they needed to notify donors on their TTI positivity, and that it was the donors who had no information on notification with a mean of 3.5000 and standard deviation of 1.34450, meaning that the donors do not know the importance of notification and hence are not serious in following up on their TTI status, thus the healthcare workers are facing challenges in notifying them appropriately, there were issues on high workload as also one of the challenges faced by healthcare workers meaning that health care workers do not have enough time that can be allocated to donor notification purposes. Majority of respondents disagreed with the factor of lack of support supervision as causing challenges in donor notification, however support supervision was only from the national blood transfusion services whereas there was no supervision from the county health management team with a disagreement mean of 2.5000 and standard deviation of .94054.

Factors associated procedures in relation to lack of donor appointment, lack of donor clinic days were agreed by the respondents as causing challenges to donor notification by a mean of 3.7571 and a standard deviation of 1.33631, this means that the blood bank management have not put proper donor appointment procedure for the purposes of notification hence the challenges faced. However a large number of respondents were uncertain on the existence of current notification study updates on donor notification with an agreement mean of 3.8857 and a standard deviation of .99449, this means the

healthcare workers cannot access any current updates on donor notification challenges both in literature and local content.

Provision to facilitate donor notification processes were also some of the challenges faced by health care workers in donor notification in that a majority of the respondents agreed that there was lack TTI screening equipment in the Lodwar blood bank satellite, with an agreement mean of 3.7714 and a standard deviation of 1.49174, this means the blood is screened for TTI at a different site, there were some of the respondents who were undecided on the issue of whether the donors were not given appointment cards at an agreement rate of a mean of 3.1429 and a standard deviation of 1.29241, this clearly means that the healthcare workers were not aware of the need to design donor appointment cards to facilitate donor notification process.

Majority of the respondents disagreed with the fact that lack of donor database in the blood satellite contributed to donor notification challenges. The healthcare workers kept manual copies of donor information but had no digital data base to facilitate tracking of donors who have been notified or need to be notified, this response had a mean of 1.9286 and a standard deviation of .91687 this means that they were not aware of the need to update their data base into a digital format. Some respondents disagreed on the facts that; there was no clear communication channel and lack of clear records on notified and un notified donors at a mean of 2.4286 and 2.1857 and a standard deviation of .93761 and 1.12171 respectively. this means they had put in place clear communication channel and notification documentation was available. Most respondents agreed that donors were not given appointment cards at a mean of 3.8571 and a standard deviation of 1.16732, this means donors do not know exactly when they are supposed to return to the blood bank for notification purposes since the health care workers are not giving them appointment cards. Still a good number of respondents agreed that there was difficulty in reaching the donors through phone or due to long distance, thus the challenges faced in donor notification the agreement mean was 4.2143 and a standard deviation of 1.05090.



A large number of respondents agreed with the fact that TTI screening was not done in the facility this was at a mean of 3.7857 and a standard deviation of 1.25137. It means since screening is not done at the facility, there was long distance issue making it impossible for healthcare workers to reach the donors either on phone or donors do not travel just for notification purposes, there is an increased turn around time which even if the donors or healthcare workers were ready for notification were hindered by the time taken while waiting for TTI screening results thus delay in donor notification.

Policy factors contributing to lack of donor notification had a majority of respondents agreeing on there being no clear donor notification implementation structure in terms of availability of standard operating procedures on donor notification as revealed by a mean of 3.7000 and a standard deviation of 1.24035, this means the healthcare workers have not developed SOPs guiding donor notification process. Another large number of respondents agreed that there was lack of donor notification policy specifically for school going donors of ages 16 and 17 years, this means it becomes difficult for healthcare workers to inform such kind of donors on their TTI status, this response had a mean of 3.9429 and a standard deviation of 1.29241. Another majority agreed that there was no organogram in the blood bank, meaning that there is no specific staff charged with the mandate to do donor notification and hence negligence on donor notification process (a mean of 3.5714 and standard deviation of 1.08941). A larger number also agreed that there was lack of defined donor notification clinic days meaning that donors may be coming to the blood bank and miss the healthcare workers and later never to return for notification, since the healthcare workers might be engaged in other blood donation activities like recruitment and campaigns, this response had a mean of 3.7857 and a standard deviation of 1.05090.

From the regression analysis an R of 0.78 shows that there is a positive correlation between challenges to blood donor notification and blood donor notification of TTIs status. The coefficient of r-squared (0.6084) indicates that 60.84% of blood donor notification of TTIs status is affected by place, people, policies, procedures and provision. Analysis of variance (ANOVA) findings on challenges of donor notification

indicate a p-value of 0.000; this therefore means that the relationship between challenges to blood donor notification and blood donor notification of TTIs status was significant at 95% confidence level. The F statistics of 65.888 was large enough to conclude that the set variables have a significant influence on the blood donor notification of TTI status. Further analysis shows a coefficient of 0.140, 0.144, 0.104, 0.173, and 0.180 for place, people, policies, procedures and provision respectively.

### **5.3 Conclusion**

The study concludes that a considerable number of donors whom some were TTI positive with a majority of them being male, were a total of 3996 donors where there were a total of 297(7.4%) donors who were TTI positive and with only 10 (3.4%) being notified. This means that those notified are very few leaving a majority of blood donors who are TTI positive just out there without notification information, care, and treatment (those not notified). It is also true that there are many donors who are willing to donate blood but do not get notified as the policy stipulates. Since the number of donors with positive TTIs is high and only a few are notified it means the healthcare workers are facing challenges in blood donor notification. High TTI positivity was noted in 2017(10.28%) as compared to 2018 (4.83%) it is not clear why there was high TTI positivity, this could be attributed by may be change in donor age group population.

TTI positivity was high for HBV for the two years (5.35%) meaning there was a high HBV infection among blood donors than other TTI positivity, however the high HBV positivity was also noted as high in male who had a positivity of 5.6% compared to female donors who had HBV positivity of 1.8%, the reason for high male positivity can not be explained in this study as it was not part of research objective, may be it is because the male form the majority of donor population

The conclusion on Challenges to donor notification shows that all the five factors associated with lack of donor notification contributed to lack of donor notification by healthcare workers. These were, place, provision, people, procedures and policy issues. It was evident that human resource was a challenge faced by healthcare workers in donor

notification, in that the staff are few, have a high workload, this hinders proper notification since there is no staff available for donor notification, all the staff are engaged in other blood donation activities like donor campaign and recruitment. The blood bank healthcare workers are supported by the National Blood Transfusion Services management team which is done only a few times in the year, while the county health management team does not supervise the blood bank healthcare workers, the lack of frequent support supervision makes identification of gaps faced by healthcare workers minimal thus may miss out on the right support needed, the healthcare workers had the information that they need to notify donors on their TTI status, but could not notify donors as required due to the five factor challenges, the donors also had the information that they need to be notified but did not take it as an important aspect in blood donation, some repeated donations without even inquiring their previous TTI status.

There was also lack of donor appointment cards, clinic days, lack of current updates on donor notification, this means the healthcare workers did not have a provision for donor appointment cards showing when the donors are supposed to come back after donation in order to be notified on their TTI status and is also due to lack of clinics days specifically for donor notification purposes, since special clinic days can be set for various blood donation activities like; for campaign, recruitment, donor support, TTI notification, etc.

Donor notification challenges faced by healthcare workers on provision were; lack of TTI screening equipment in the facility, lack of donor appointment cards, with some disagreeing that the donors were not given appointment cards, lack of TTI screening equipment in the Lodwar blood bank satellite means that; blood screening is done at different testing site meaning there is increased turn around time where the healthcare workers have to wait for some days before they receive donor results from the testing laboratory, this hinders immediate donor notification thus contributing to the challenges, some of the respondents do not know the importance of donor notification appointment card so there is no seriousness put in provision of cards which would have eased donor notification process, since this could have helped the donors to remember the need to go back to the blood bank satellite for the purposes of notification on their TTI status.

A majority of the respondents disagreed that there was lack of donor database, they had a manually operated donor record files, this should be substituted with a digital database to ease or keep track of all donor activities in the blood bank satellite, and also disagreed with the statement that there was no clear communication structure, the healthcare workers inform the donors on the need for notification but don not emphasize on the importance of donor notification which led to the donors not taking notification seriously, the healthcare workers need to emphasize the need for the donors to come back in order to be notified on their TTI status, and this can be supported by providing donor appointment cards, having specific donor notification donor clinic days and so on.

A good number of respondents agreed that; TTI screening was not done in the facility and donors had to come from far in order to access the blood bank satellite, the location of the satellite is centrally placed whereas it serves a bigger Turkana county population thus some of the donors are actually coming from far to donate blood and once this is done the donors may not feel obliged to go back to the facility just for notification services or purposes, likewise the healthcare workers do not have mechanism to notify the donors due to the distance, and some due to lack of mobile phones or if they have there could be issues related to poor network.

Lack of donor notification structure, lack of Sops, lack of notification policy for school going donors of ages 16 and 17 years, lack of donor notification implementation guideline in the form of organogram that clearly shows healthcare worker roles on donor notification and lack of specific donor notification clinic days, were some of the factors that the respondents agreed on, these have a high impact and it's the reason why the healthcare workers are facing challenges in donor notification, the blood transfusion policies have notification policies on other TTI notification guidelines but have none for school going donors thus giving challenges to healthcare workers on how to notify them incase of positive TTI status. The lack of organogram fails to hold which healthcare is responsible for donor notification, leaving the healthcare workers with unclear roles thus impacting negatively on donor notification, lack of specific donor notification clinic days makes it hard for the healthcare workers to determine exactly when to notify the

donors with positive TTI status since most other blood bank activities take their time and most of the time they work a way from the satellite itself especially when doing mass donor campaigns and recruitment exercises.

#### **5.4 Recommendations**

In light of the above findings, the study recommends;

Notification of donors should be made mandatory in order to notify blood donors who are TTI positive with the aim of informing them so that they can gain information on prevention, care and treatment of positive TTI for quality life outcomes. Other than informing donors on their TTI positivity the importance of TTI positivity notification should be emphasized to the blood donors by the healthcare workers so that they are able to see the importance of positive TTI notification, there is need to do research on prevalence of TTIs among blood donors attending Lodwar blood bank satellite, and further to be segregated to which gender and age groups mostly affected or positive for TTIs. There is also need for other studies to look into current HBV prevalence in the general population since the last study that was done was of Kenya Aids Indicator Survey 2012 which showed a HBV prevalence of 8.8% in Turkana County. The current trend in HBV positivity in blood donors gives a reason to worry since the study population is just a fraction of Turkana community and their status is known by the virtue of donating blood otherwise their status could have remained unknown.

The blood bank management (healthcare workers) need to come up with a written donor implementation structure in terms of revised standard operating procedures stating or outlining donor notification process, design a structure whereby blood donors are given appointments cards or any form of reminders, inform donors not only of the need to come back for notification but emphasize on the importance of timely notification especially for positive TTI status and for donors who may not reach the blood bank satellite for notification purposes, design a system whereby they can be reached and this should come out from the donor for flexibility purposes aimed at making sure the donors are notified whatsoever.

Factors contributing to donor notification that are human resource related should be addressed by the hospital management committee (LCRH), laboratory coordinator and deputy director for medical services Turkana county, to curb human resources shortage so that some staff can comfortably be allocated donor notification roles, there is also need for support supervision from both the national and county stakeholders to support, strengthen and provide technical assistance to the blood bank satellite for effective donor notification and other blood bank satellite roles, as well as the blood bank satellite management to schedule appointments on specific clinic day with blood donors for notification purposes.

Policies on donor notification especially for school going donors should be formulated by the National transfusion services management team at the policy formulation level and effected by existing blood bank satellites, since the only available policy is on HIV notification and not for other TTIs and this should go along with updating the blood bank on current issues focusing on donor notification .The blood bank management needs to design an organogram outlining steps taken towards donor notification, outlines from when the donor is received in the blood bank, done screening for eligibility, baseline tests, actual donation ,testing or screening of TTIs and results feedback to donor( this process should come out clearly).

Although some of the challenges might not be addressed as soon as possible due to policy guiding blood bank satellites, a few of these challenges can be addressed within the blood bank satellite itself, for example, providing appointment cards indicating when blood donor is required to come for notification putting in mind that screening is not done in the facility since there is lack of screening equipment.

## **5.5 Study Limitation**

The scope of the study was limited to Lodwar county and referral hospital blood bank satellite, limiting the geographical coverage and study population to which the study was done, also there was a limitation regarding donor notification in only a few sampled years, the research objectives were limited to only donors who donated blood and were

TTI positive and those who were notified, and challenges faced by healthcare workers in donor notification on their TTI status. The study did not explore on age and gender segregation to ascertain TTI positivity in the specific donor population, and also there was no study on the prevalence of the specific TTIs and the reasons as to why HBV positivity was higher than that of other TTIs among blood donor population or in the general public and again there were no reasons to explain why TTI and specifically HBV positivity was high in 2017 compared to 2018 and why its positivity was high in male than their female counterparts.

### **5.6 Suggestions for Further Studies**

Other researchers are encouraged to pursue the same research problem or topic but have to include a more elaborate scope of study to include other similar blood bank satellites in Kenya in order to increase geographical and study population coverage. Prevalence on TTI positivity can be done for all satellites unlike the previously limited studies done in Nyeri and Kisumu alone in order to widen the research area findings in all satellites.

TTI positivity should be studied to ascertain which age group or gender is mostly positive with blood donor TTIs, this will help in policy formulation for development of interventions aimed to address specific issues on donor notification of positive TTI status, due to high HBV positivity in blood donor blood and in males, there need to study the reasons as to why HBV is higher than other TTIs and why the males are the mostly affected. Other research studies could focus on blood transfusion policies that support blood donation through research policy formulation especially on donor notification guidelines for school going donors.

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## **APPENDICES**

### **APPENDIX 1: INFORMED CONSENT FORM**

#### **PARTICIPANT INFORMATION AND CONSENT FORM**

##### **SECTION I: INFORMATION SHEET**

**INVESTIGATOR: ALICE NATABA**

**INSTITUTIONAL AFFILIATION: Strathmore Business School (SBS)**

##### **SECTION 2: INFORMATION SHEET**

Challenges faced by healthcare workers in donor notification of donors attending Lodwar satellite.

###### **2.1: WHY IS THIS STUDY BEING CARRIED OUT?**

This study is carried out to find out challenges faced by healthcare workers working in Lodwar blood bank satellite in Transfusion transmissible infections donor notification and finding solutions to address the gaps or challenges facing healthcare workers.

###### **2.2: Do I have to take part?**

No. Taking part in this study is optional, if you decide to take part, you will be asked to complete a questionnaire to get information on challenges faced by healthcare workers in transfusion transmissible infection notification among blood donors. If you do not understand any questions or any part of the questionnaire, you will be given a clear explanation of the meaning of any questions raised for clarification, you are free to decline to take part in the study at any time without giving any reasons.

###### **2.3: Who is eligible to take part in this study?**

Nurse counselors working in blood bank satellite

HIV testing and counseling providers

Blood bank in charge

###### **2.4: Who is not eligible to take part in this study?**

Healthcare workers not working in the blood bank satellite

2.5: What will taking part in this study involve for me?

You will be approached by the research study investigator and requested to take part in the study, if you are satisfied and fully understand the goals behind the study, you will be asked to sign the informed consent form (this form) and then taken through a questionnaire to complete.

2.6: Are there any risks or dangers in taking part in this study?

There are no risks in taking part in this study, all information you will provide will be treated as confidential and will not be used in any way without your permission.

2.7: Are there any benefits of taking part in this study

The information you give will be used to strengthen donor notification processes in Lodwar blood bank satellite.

2.8: What will happen to me if I refuse to take part in this study?

Participation in this study is entirely voluntary; you can refuse to participate at the start or even later change your mind, as you are free to withdraw from this study at any time without any explanation.

2.9: Who will have access to my information during this research?

All research records will be stored in securely locked cabinets; the information will be transcribed into our database.

2.10: Whom can I contact in case I have further questions?

If you want to ask someone independent anything about this research please contact

The secretary- Strathmore university institutional ethics review board, P. o. Box 59857, 00200, Nairobi, email [ethicsreview@strathmore.edu](mailto:ethicsreview@strathmore.edu) Tel number: +254703034375

You can also contact my supervisor, DR.PRATAP KUMAR, at Strathmore Business School, Nairobi, or email [pkumar@strathmore.edu](mailto:pkumar@strathmore.edu) or phone number +254731848163

I.....have had the study explained to me. I have understood all that I have read and have explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study [   ]

I agree to take part in this research [   ]

Don't agree to take part in this research [   ]

Storage of information on the completed questionnaire [   ]

I agree to have my completed questionnaire stored for future data analysis [   ]

I don't agree to have my completed questionnaire stored for future data analysis [   ]

Participant's signature

date----/----/-----

Participant name

I, ..... (Name of person taking consent) certify that I have followed the sop for this study and have explained the study information to participant named above, and that s/he has understood the nature and the purpose of the study and consents to the participation in the study. S /he has been given opportunity to ask questions which have been answered satisfactorily.

Investigators signature:

Date:

Investigator's name:

Date

## APPENDIX II: DATA COLLECTION TOOLS

### SUMMARY OF DONOR TRANSFUSION TRANSMISSIBLE INFECTION DATA

TOTAL	HI	HB	HC	SYP	HIV&HB	HIV	HIV	HBV&HC	HBV	HBV &	HCV&	HIV.	TOTAL	NOTIFIE	NOT
L	V	V	V	H	V	& HCV	& SYPH	V	& SYPH	SYPHILI S	SYPHILI S	HBV&HC V	L	D	NOTIFIE D

### APPENDIX III: BLOOD BANK HEALTHCARE WORKER QUESTIONNAIRE

#### Blood bank healthcare worker questionnaire

#### QUESTIONNAIRE FORM #1

Hello, my name is Alice Nataba; I am collecting data on challenges faced by healthcare workers in blood donor notification on transfusion transmissible infection status process.

The purpose of this exercise is to gather information from healthcare workers who work in the blood bank satellite. The information will identify challenges faced by healthcare workers in blood donor notification.

Title: challenges faced by healthcare workers in transfusion transmissible infections to blood donors.

Healthcare worker details

Name.....

Title.....

#### INSTRUCTIONS

I appreciate your help in responding to this survey. Please indicate the extent to which you agree with the following statements as they relate to donor notification at Lodwar County Referral Hospital blood bank satellite. Kindly fill by indicating the appropriate number, using a scale of agreeableness as explained below.

1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree)

Circle the correct response to each question						
#	Question	Survey Scale: 1= Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree				
1	Human resource is a challenge to blood donor notification.	1	2	3	4	5
2	Lack of knowledge by healthcare workers on donor notification processes is a major challenge.	1	2	3	4	5
3	Lack of knowledge by blood donors on their need to know their transfusion transmissible infection status contributes to lack of concern in knowing their transfusion transmissible	1	2	3	4	5



	status.					
4	High workload in the blood bank affects time allocated for donor notification services due to shortage of staff.	1	2	3	4	5
5	There is no support supervision by supervisors to blood bank healthcare workers on blood bank and donor processes.	1	2	3	4	5
6	Lack of donor appointments and no scheduled donor notification clinic days contributes to failure in donor notification.	1	2	3	4	5
7	Lack of equipment for screening transfusion transmissible infections in the blood bank satellite affects donor notification process since blood is screened at a different site or region.	1	2	3	4	5
8	Screening tests and Procedures are not conducted in the Lodwar blood bank satellite thus increasing turn around time for donor notification.	1	2	3	4	5
9	The donors are not given appointment cards in the Lodwar blood bank satellite hence no schedule for notification.	1	2	3	4	5
10	There is no database on blood donor information in Lodwar blood bank satellite where blood donor records are kept regarding donation processes.	1	2	3	4	5
11	Utilization of blood donor notification services is minimal due to lack of a clear communication channel between the donors and healthcare workers.	1	2	3	4	5
12	Lack of clear records of notified and UN notified blood donors makes it difficult to ascertain which donors are to be notified or not.	1	2	3	4	5
13	Blood donors are not given appointments as a routine practice in the blood bank thus they forget to return for notification incase of positive transfusion transmissible infection.	1	2	3	4	5
14	There is no clear donor notification implementation	1	2	3	4	5

	structure in the blood bank satellite with regards to standard operating procedures.					
15	There is difficulty in reaching the donors either through phone or due to long distance making it difficult to facilitate effective donor Notification process.	1	2	3	4	5
16	There is no standard blood bank notification policy especially for school going blood donors of ages 16 and 17 years, making it difficult to notify incase of positive transfusion transmissible infection.	1	2	3	4	5
17	There are no current study updates on blood donor notification challenges both in literature and local content meaning no reference to strengthen donor notification.	1	2	3	4	5
18	There is no organogram in the blood bank satellite though the policy stipulates so, its lack in the blood bank leads to healthcare worker non responsibility attitude since there is no direction given on who is supposed to notify donors on their transfusion transmissible infection status.	1	2	3	4	5
19	Lack of defined clinic days makes it difficult for healthcare workers to allocate time and day dedicated to donor notification.	1	2	3	4	5
20	The blood bank satellite is far from the donors since donors travel from a far and thus impossible for them to return for notification.	1	2	3	4	5

Signed.....Date.....

Thank you very much for answering this questionnaire.

#### APPENDIX IV: WORKPLAN

Activity	Duration	Person responsible
Proposal development	December 2018-February 2019	Student
Submission of Proposal for defense	1 <sup>st</sup> week of April 2019	Student
Proposal approval	1 <sup>st</sup> week of April 2019	Strathmore Business School
Approval to conduct research at Lodwar County and Referral Hospital	2 <sup>ND</sup> week of April 2019	Management of Lodwar County and Referral Hospital
Data collection	3 <sup>RD</sup> week of April 2019	Student
Data Analysis	4 <sup>TH</sup> week of April 2019	Student
Writing of final report	4 <sup>th</sup> week of April 2019	Student
Mock Defense	1st week of May 2019	Student
Submission of dissertation	End of 1 <sup>st</sup> week of May 2019	Student
Dissertation defense	2 <sup>nd</sup> week of May 2019	Strathmore Business School
Corrections if any and submission of final dissertation	3 <sup>rd</sup> week of May 2019	Student
Graduation	28 <sup>th</sup> June 2019	Strathmore Business School

## APPENDIX V: BUDGET

No.	Expenditure Item	Quantity	Cost (KSH)
1.	Stationary		
	Printing	3 copies	3,000
	Binding	3 copies	1,000
	Note books	3	300
	Data collection	2 weeks	5000
	Data analysis	2weeks	10,000
	Transport	3times	60,000
	Printing of thesis	4 copies	2,000
	Binding of thesis	3 copies	600
	Total		81,900

## APPENDIX VI: LETTER FROM TURKANA COUNTY GOVERNMENT

REPUBLIC OF KENYA  
TURKANA COUNTY GOVERNMENT



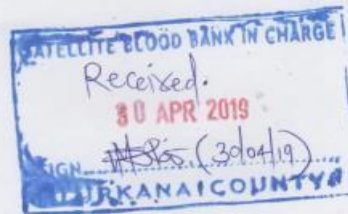
MINISTRY OF HEALTH SERVICES AND SANITATION

Directorate of Policy, Planning  
M & E, Research, Department of Health  
Turkana County,  
P.O Box 11 - 30500, Lodwar

Located at the Ministry of  
Housing Building - Nawoitorong  
Tel: +254 771 457 033

29/04/2019

To: In-Charge  
Blood Bank Department  
Lodwar County and Referral Hospital  
P.O. Box 13-30500  
Lodwar Town,  
Turkana County



Dear Sir,

Turkana County Department of Health Research Committee has received a request of permission to conduct a research in your facility. The purpose of this letter is to grant Ms Alice Nataba admission number MBA-HCM/98009/2017, student at Strathmore University Business School (SBS) permission to conduct research at Lodwar County and Referral Hospital Blood Bank Department as part of her SBS MBA HCM Master's Program. The project titled, "Challenges faced by healthcare workers in donor notification on transfusion transmissible infections: A case study of Lodwar County and Referral Hospital blood bank satellite". The information obtained from the intended organization shall be treated with confidentiality and shall be used for academic purposes only.

After review of the study protocol, the research committee does hereby grant permission for Ms Alice Nataba to conduct the research at your institution.

Sincerely,

Dr Okemwa Job Ongubo

Chair Research Committee Department of Health Turkana County

Cc. Director Lodwar County and Referral Hospital

## APPENDIX VII: FINAL DECISION CERTIFICATE

RHInnO Ethics - - 1 of 1

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### Final Decision Certificate

This document certifies that the study:

**"BARRIERS TO BLOOD DONOR NOTIFICATION ON  
TRANSFUSION TRANSMISSIBLE INFECTIONS: ACASE STUDY  
OF LODWAR COUNTY AND REFERAL HOSPITAL BLOOD  
BANK SATELITE"**

**Principal Investigator:** Ms. NATABA, ALICE N/A

**Reference number:** SU-IERC0394/19

Was reviewed and received the following status:

**"done"**

**Additional Comments:** Final decision: **approved**

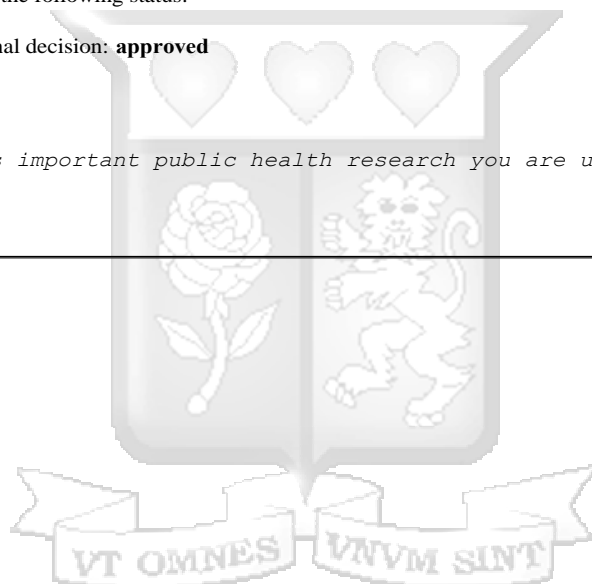
Comments sent:

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*Reviewer #1:*

*'Thank you for this important public health research you are undertaking. '*

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## APPENDIX VIII: LETTER OF INTRODUCTION FROM THE UNIVERSITY



Monday, 29 April 2019

**The national commission for science  
and technology innovation,  
P.O. Box 30623-00100,  
Nairobi.**

Dear Sir/Madam

**INTRODUCTION – ALICE NATABA**

This is to introduce Ms. Alice Nataba admission number MBA-HCM/98009/2017 who is an MBA in Healthcare Management (MBA HCM) student at Strathmore University Business School (SBS). As part of our SBS MBA HCM Master's Program, Alice is expected to do applied research and to undertake a project. This is in partial fulfilment of the requirements of the Master of Business Administration. She would like to request for a research permit to help her finalize her research.

Alice is undertaking a research project on '**Challenges faced by healthcare workers in donor notification on transfusion transmissible infections: A case study of Lodwar County and Referral hospital blood bank satellite**'. The information obtained from the intended organization shall be treated with confidentiality and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct usefulness to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest, if not of practical value to your organization.

We very much appreciate your support and we shall be willing to provide any further information required.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Veronica Muniu".

**Veronica Muniu,  
Manager – Programs.**



Ole Sangale Road, Madaraka Estate  
PO Box 59857 00200 Nairobi, Kenya  
Cell: +254 703 414/6/7  
Email: [info@sbs.ac.ke](mailto:info@sbs.ac.ke) or Visit [www.sbs.strathmore.edu](http://www.sbs.strathmore.edu)  
Twitter: @SBSKenya

Strathmore Business School is a proud member of:



## APPENDIX IX: LETTER FROM NACOSTI



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: dg@nacosti.go.ke  
Website: www.nacosti.go.ke  
When replying please quote

NACOSTI, Upper Kabete  
Off Waiyaki Way  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/42576/30271**

Date: **24<sup>th</sup> May, 2019**

Alice Nataba  
Strathmore Business School  
P.O. Box 59857, 00200  
**NAIROBI.**

#### **RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Challenges to blood donor notification on transfusion transmissible infections: A case study of Lodwar County and Referral Hospital Blood Bank Satellite*" I am pleased to inform you that you have been authorized to undertake research in **Turkana County** for the period ending **23<sup>rd</sup> May, 2020.**

You are advised to report to **the County Commissioner, the County Director of Education and the County director of Health Services, Turkana County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA MSc., MBA, MKIM**  
**FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Director of Education  
Turkana County.

The County Director of Health Services  
Turkana County.



## APPENDIX X: PERMIT FOR DATA COLLECTION

**THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013**

**The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.**

**CONDITIONS**

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

**National Commission for Science, Technology and Innovation**  
P.O. Box 30623 - 00100, Nairobi, Kenya  
TEL: 020 400 7000, 0713 788787, 0735 404245  
Email: dg@nacosti.go.ke, registry@nacosti.go.ke  
Website: www.nacosti.go.ke

**REPUBLIC OF KENYA**

**NACOSTI**

**National Commission for Science, Technology and Innovation**

**RESEARCH LICENSE**

**Serial No.A 24820**

**CONDITIONS: see back page**

**THIS IS TO CERTIFY THAT:**

**MS. ALICE NATABA**

**of STRATHMORE BUSINESS SCHOOL,**

**0-30500 LODWAR, has been permitted to**

**conduct research in Turkana County**

**on the topic: CHALLENGES TO BLOOD**

**DONOR NOTIFICATION ON TRANSFUSION**

**TRANSMISSIBLE INFECTIONS: ACASE**

**STUDY OF LODWAR COUNTY AND**

**REFERAL HOSPITAL BLOOD BANK**

**SATELITE**

**for the period ending:**

**23rd May,2020**

**Permit No : NACOSTI/P/19/42576/30271**

**Date Of Issue : 24th May,2019**

**Fee Recieved :Ksh 1000**

**Applicant's Signature**

**Director General**

**National Commission for Science, Technology & Innovation**

